

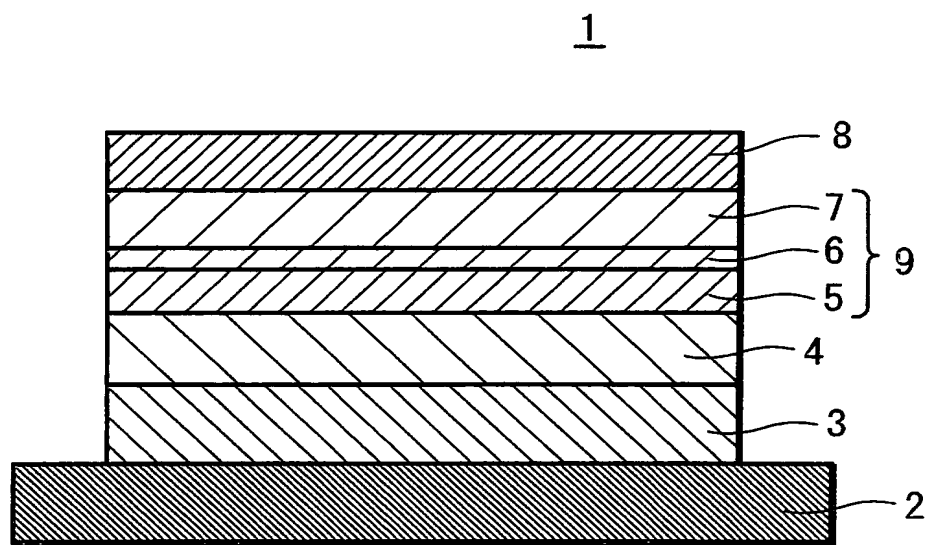
FIG. 1

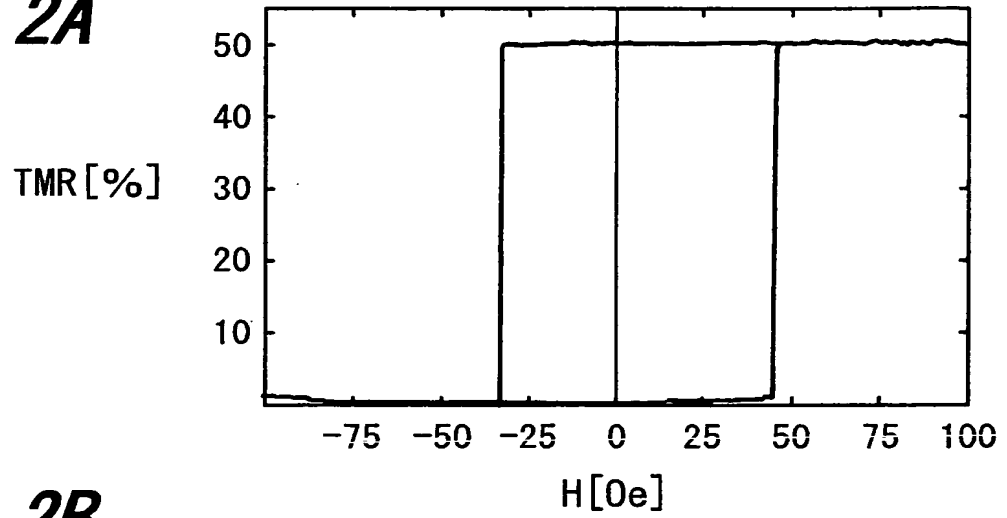
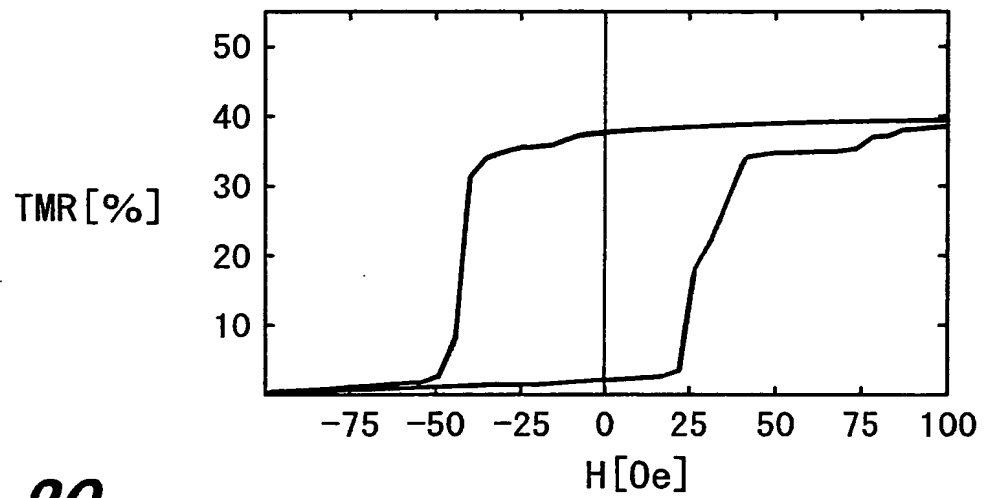
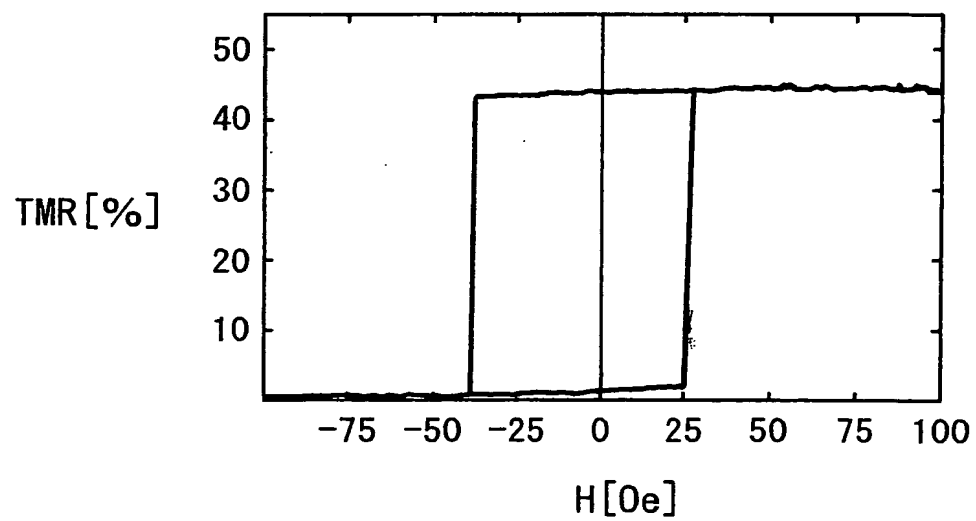
FIG. 2A**FIG. 2B****FIG. 2C**

FIG. 3

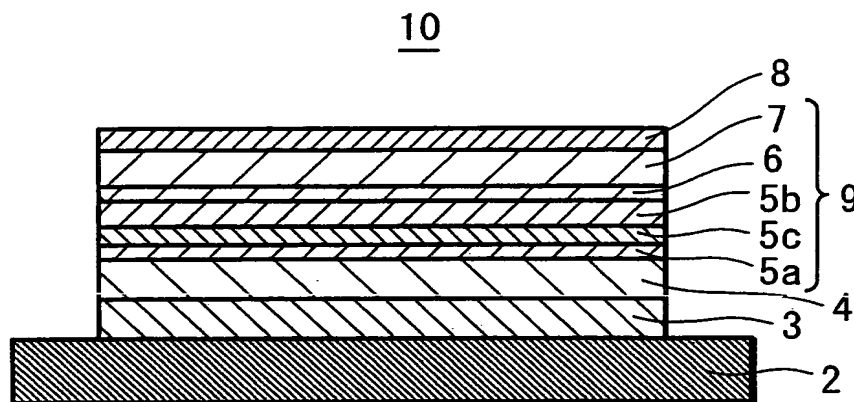


FIG. 4

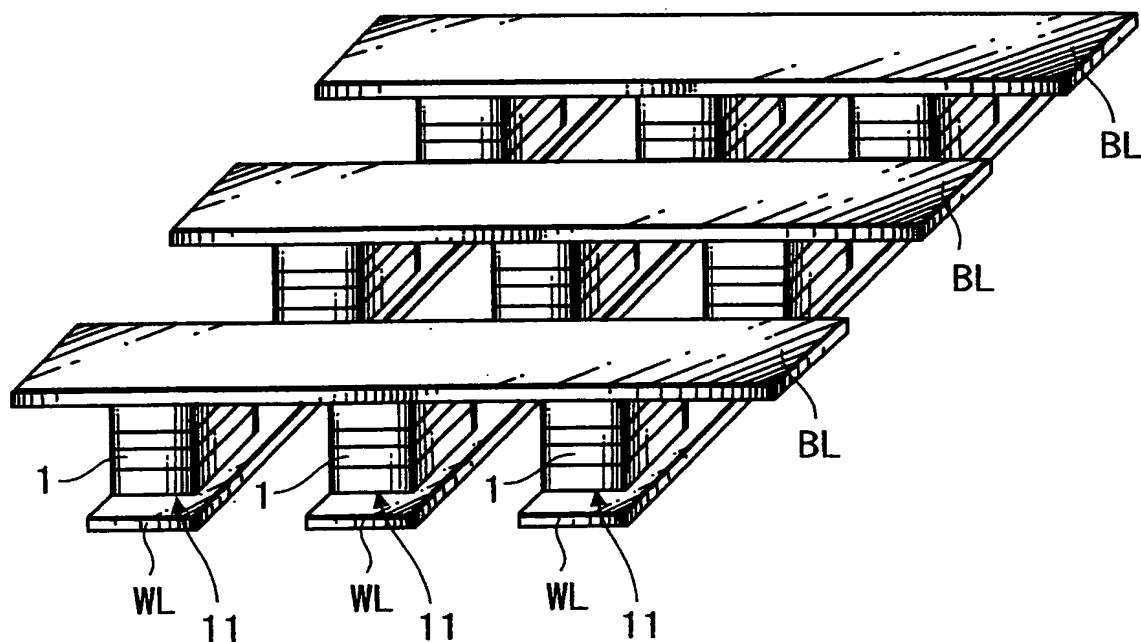


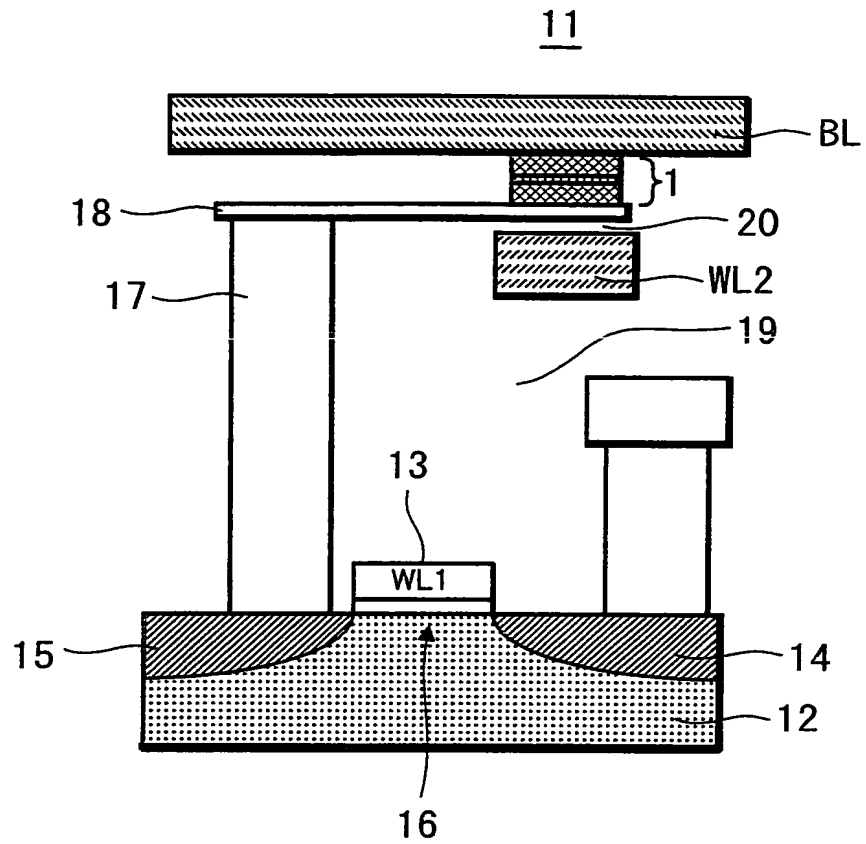
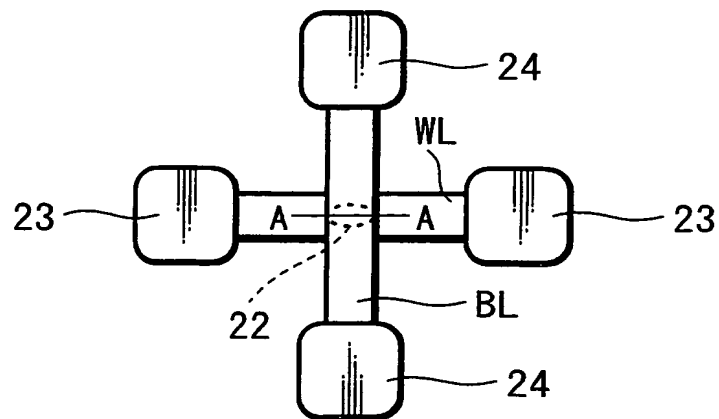
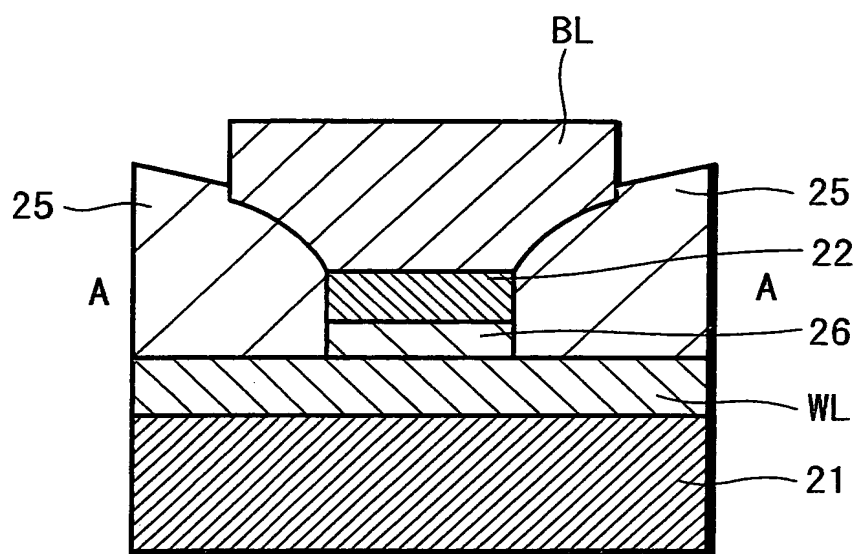
FIG. 5**FIG. 6**

FIG. 7



DESCRIPTION OF REFERENCE NUMERALS

1, 10, 22 ... tunnel magnetoresistive devices
(TMR devices)

2, 21 ... substrate

3 ... underlayer

4 ... antiferromagnetic layer

5 ... magnetization fixed layer

5a ... first magnetization fixed layer

5b ... second magnetization fixed layer (reference layer)

5c ... nonmagnetic conductive layer

6 ... tunnel barrier layer

7 ... magnetization free layer

9 ... ferromagnetic tunnel junction

11 ... memory cell

23, 24 ... pads

WL, WL1, WL2 ... word lines

BL ... bit line